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GB 2245584 A

(58) Field of search

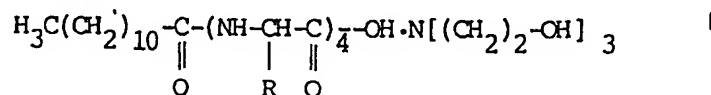
UK CL (Edition K) C5D DHC

INT CL⁵ C11D 1/10 1/32 1/90 1/94

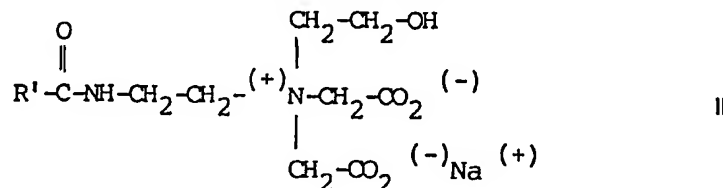
Online databases: WPI, EDOC

(54) Detergent, composition containing betaine

(57) A detergent, particularly for cleaning sensitive textiles contains at least one protein hydrolyzate-fatty acid condensation product of general formula I



in which R is an amino acid moiety, together with a betaine of general formula II



in which R' is an alkyl group with 8 to 14 carbon atoms.

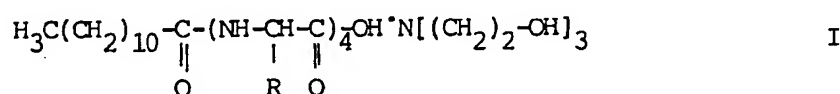
DETERGENT

The invention relates to a detergent, particularly but not exclusively for cleaning sensitive textiles.

During the cleaning of sensitive textiles, such as in particular when cleaning top clothing, apart from the cleaning action of the detergent, importance is also attached to its effects on the colour, the feel, the dimensional stability and the shape. As is known fine or high-duty detergents contain coconut oil alcohol sulphonates, coconut oil alcohol ether sulphates, coconut oil alcohol hydroxyethylates or C₁₃₋₁₅ oxo alcohol hydroxyethylates, phosphates or combinations of said surfactants. Such known detergents are either tailor-made to a high washing action or high protection of the cloth, or compromises are made between these two aims.

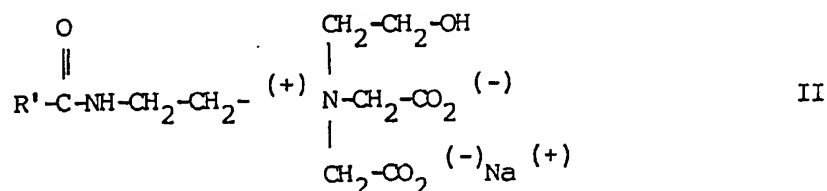
The problem of the present invention is to obtain a detergent for cleaning sensitive textiles, which simultaneously has a good washing action and provides good protection of the cloth, whilst in particular preventing the shrinking and matting of sensitive wool.

According to the invention there is provided a detergent which, as surfactants, contains a combination of at least one protein hydrolyzate-fatty acid condensation product of general formula I



in which R is at least one amino acid residue of collagen or a mixture thereof,

with a betain derivative of general formula II



in which R' is an alkyl group with 8 to 14 carbon atoms or a mixture thereof.

During the acid hydrolysis of collagen, essentially formation takes place of

the amino acids glycine, L-proline, trans-4-hydroxy-L-proline, L-glutamic acid, L-arginine, L-alanine, L-aspartic acid, L-lysine, L-leucine, L-serine and L-isoleucine. Further amino acids are only obtained in small amounts.

In the protein hydrolyzate-fatty acid condensation products having the indicated formula and used according to the invention, preferably R essentially stands for a mixture of the above-enumerated collagen amino acid residues.

In the betain derivative used in the present invention with the indicated formula, R' is generally preferably also a mixture of alkyl radicals, even more preferably in the form of a C₈-C₁₄ coconut fraction. _____
_____ These alkyl groups can also contain hydrocarbon radicals with unsaturated bonds.

The detergents of the present invention _____
_____ simultaneously lead to extremely good washing actions and an unexpectedly good protection of the cloth or fabric, whilst almost completely preventing the matting and shrinking of sensitive wool.

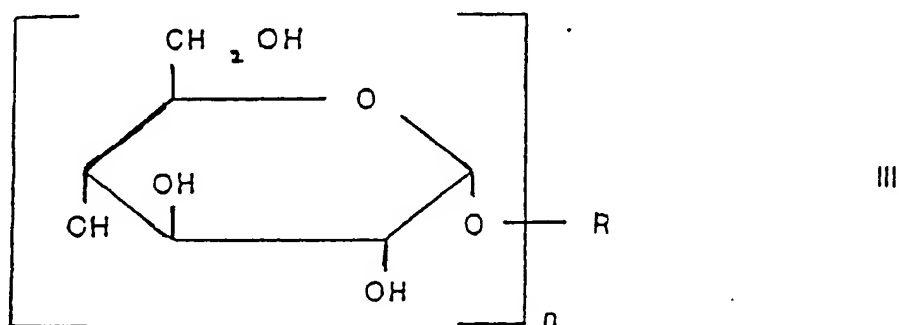
Preferably the detergents according to the invention contain the protein hydrolyzate-fatty acid condensation product and the betain derivative in a weight ratio of 1:3 to 3:1 and preferably 1:1.5 to 1.5:1. The washing action and protection of the cloth reach optimum values in these ranges.

Appropriately the detergents of the present invention _____
_____ additionally contain nonionic surfactants of the fatty alcohol hydroxyethylate and/or alkyl polyglucoside type, because the latter can further increase the removability of fat-containing impurities. The fatty alcohol hydroxyethylates used are preferably C₈-C₁₅ and in particular C₈-C₁₄ fatty alcohol hydroxyethylates.

The alkyl polyglucosides are nonionic surfactants, which are produced from raw materials such as starch and fat or their secondary products. From the chemical standpoint they are acetals, which are prepared from sugars, i.e. cyclic hemiacetals, with fatty alcohols in the presence of proton-supplying catalysts.

An economic way to produce alkyl polyglucosides is the synthesis according to E. Fischer. In a first reaction, under proton catalysis, a corresponding

alkyl polyglucoside is formed from a sugar, such as glucose, and a low molecular weight alcohol and then in the second reaction stage it is reglucosidized with a fatty alcohol. Both reactions are marked equilibrium reactions, so that the low molecular weight alcohol or fatty alcohol must be used in high excess and/or volatile reaction products must be drawn off from the reaction mixture. The low molecular weight alcohol serves as the reaction solvent. Preferred alkyl polyglucosides used have the general formula III



in which n is the degree of glucosidizing and is preferably in the range 1.1 to 3, preferably 1.1 to 2 and R is an alkyl group with 8 to 16, preferably 10 to 14 carbon atoms and R can be a mixture of different alkyl groups in this range. The above formula also covers isomers, because alkyl polyglucosides are normally complex isomer mixtures.

In order to prevent colour loss in extremely unstable dyed textiles, it is preferable to add citric acid and/or polyvinyl pyrrolidone to the detergent according to the invention, without there being any deterioration with respect to the washing action or protection of the fabric. These substances are preferably added in a quantity of in each case 0.5 to 3% by weight, based on the detergent dry weight.

Another preferred addition to the detergent consists of disinfectants based on polyhexanethylene biguanide hydrochloride, which does not reduce the washing action or the protection of the fabric. The surfactant combination of the present invention does not impair the disinfecting action of the biguanide.

Such biguanide-based disinfectants are appropriately added in a quantity of 0.2 to 2% by weight, based on the detergent dry weight.

The following non-limiting examples and comparative examples serve to further illustrate various preferred features and embodiments of the invention.

Examples and comparative examples

To evaluate the washing action and fabric protection the following test fabric was used:

WFK ¹ wool:	fat/pigment dirt removal
WFK coffee:	tanning agent contaminant removal
EMPA ² milky cocoa:	protein contaminant removal
ISW ³ shrunk felt:	wool shrinkage tendency

- 1 WFK = Waschereiforschung, Krefeld
2 EMPA = Eidgenossische Material Prüfungsanstalt, St. Gallen
3 IWS = Internationales Wollsekretariat, Dusseldorf

This test fabric was washed and evaluated in a domestic washing machine using the wool program at 30°C and the different detergents.

Washing action = whiteness degree increase as a percentage compared with the starting value

Fabric protection = IWS fabric surface loss as a percentage of the starting value

The following detergents were tested in accordance with the prior art: FEWA, Henkel, Dusseldorf and DERVAL, AN, Kreussler, Wiesbaden.

According to the invention:

TABLE I

	A	C	C	D	E	F
Protein fatty acid condensate	20	40	--	20	15	25
Betain derivative according to formula II, in which R'COOH is a coconut oil-acid mixture	20	--	40	20	25	15
C ₁₃ -C ₁₅ fatty alcohol . 7 EO (ethylene oxide)		--	--	--	10	--
C ₁₂ -C ₁₄ alkyl polyglucoside (n = 1:2)		10	10	10	--	--
citric acid	1	1	1	1	1	1
polyvinyl pyrrolidone	2	2	2	2	2	2
biguanide	0.5	0.5	0.5	0.5	0.5	0.5
water to 100	--	--	--	--	--	--

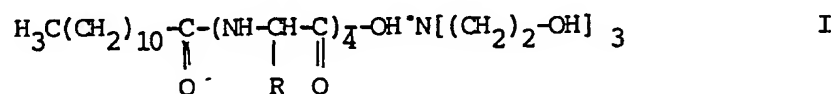
The above tests led to the results given in table II:

TABLE II

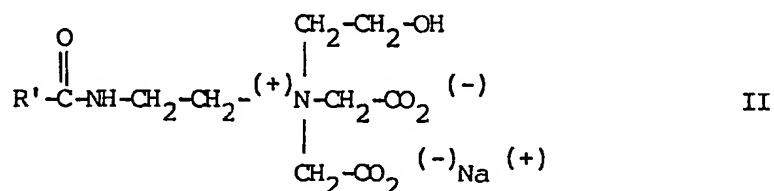
	WFK wool	WFK coffee	EMPA milky cocoa	IWS shrunk felt
FEWA	82%	48%	6.5%	4.6%
DERVAL AN	21%	46%	1.8%	1.7%
Product A	87%	52%	7.6%	1.8%
Product B	77%	48%	4.2%	2.0%
Product C	71%	46%	3.5%	2.8%
Product D	89%	54%	6.3%	1.9%
Product F	92%	49%	7.8%	1.3%

CLAIMS

1. A detergent for cleaning sensitive textiles comprising a surfactant composition which comprises a combination of at least one protein hydrolyzate-fatty acid condensation product of general formula I



in which R is at least one amino acid residue of collagen or a mixture thereof,
with a betain derivative of general formula II

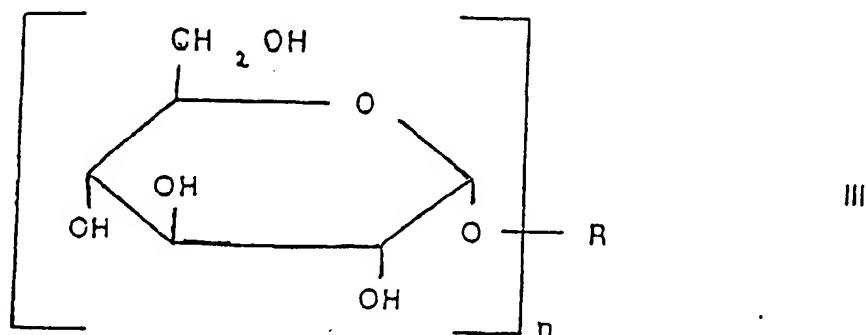


in which R' is an alkyl group with 8 to 14 carbon atoms or a mixture thereof.

2. A detergent according to claim 1 wherein R' is an alkyl group from a C₈-C₁₄ coconut fraction or a mixture thereof.
3. A detergent according to either of claims 1 or 2, wherein the protein hydrolyzate-fatty acid condensation product and the betain derivative are in a quantity ratio of 1:3 to 3:1.
4. A detergent according to claim 3 wherein the quantity ratio is 1:1.5 to 1.5:1.
5. A detergent according to any one of the claims 1 to 4, additionally comprising at least one fatty alcohol hydroxyethylate and/or alkyl polyglucoside.

6. A detergent according to claim 5, wherein the fatty alcohol hydroxyethylate is at least one C_8 to C_{15} fatty alcohol hydroxyethylate.

7. A detergent according to either of claims 5 and 6, wherein the alkyl polyglucoside has the general formula III



or isomers thereof, in which R is an alkyl group with 8 to 16 carbon atoms and n is 1.1 to 3.

8. A detergent according to claim 7 wherein R in general formula III is an alkyl group with 10 to 14 carbon atoms.

9. A detergent according to either of claims 7 and 8 wherein n in general formula III is 1.1 to 2.

10. A detergent according to any one of the claims 1 to 9, additionally comprising 0.5 to 3% by weight, based on the detergent dry weight, of citric acid.

11. A detergent according to any one of the claims 1 to 10, additionally comprising 0.5 to 3% of weight, based on the detergent dry weight, of polyvinyl pyrrolidone.

12. A detergent according to any one of the claims 1 to 11, additionally comprising 0.2 to 2% by weight, based on the detergent dry weight, of biguanide disinfectant.

13. A method for cleaning sensitive textiles comprising cleaning a textile with a detergent according to any one of claims 1 to 12.

14. A textile treated in accordance with the process of claim 13.

15. A detergent according to claim 1 substantially as hereinbefore described.

16. A method for cleaning sensitive textiles according to claim 13 substantially as hereinbefore described.

17. A textile according to claim 14 substantially as hereinbefore described.

Patents Act 1977
Examiner's report to the Comptroller under
Section 17 (The Search Report)

Application number

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Relevant Technical fields

(i) UK CI (Edition K) C5D, DHC

(ii) Int CI (Edition 5) C11D, 1/10, 1/32, 1/90, 1/94

Databases (see over)

(i) UK Patent Office

(ii) ONLINE DATABASES: WPI, EDOC

Search Examiner

MR R STAGG

Date of Search

9 OCTOBER 1992

Documents considered relevant following a search in respect of claims 1-17

Category (see over)	Identity of document and relevant passages	Relevant to claim(s)
E	GB 2245584 A (KAO CORPORATION) See Claims 1 and 9	1

Category	Identity of document and relevant passages	Relevant to claim(s).

Categories of documents

X: Document indicating lack of novelty or of inventive step.

Y: Document indicating lack of inventive step if combined with one or more other documents of the same category.

A: Document indicating technological background and/or state of the art.

P: Document published on or after the declared priority date but before the filing date of the present application.

E: Patent document published on or after, but with priority date earlier than, the filing date of the present application.

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